INSTITUTE FOR Sustainable Communities

EESL

P4G Pioneering Green Partnerships, Investing in Impact

Industrial Energy Efficiency Opportunities Assessment in Asia

Country Focus: Bangladesh, Indonesia, and Vietnam

Acknowledgements

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About the Energy Efficiency Alliance

The Institute for Sustainable Communities (ISC) and EESL are jointly executing the Energy Efficiency Alliance for Industry (E^2 Alliance) Project, accelerated by P4G (Partnering for Green Growth and the Global Goals 2030), which aims to scale and replicate a demand aggregation based innovative business model to drive the adoption of energy efficiency interventions by industry in India and South East Asia. The E2 Alliance is tackling critical barriers to energy efficiency through manufacturer engagement, affordability and financing, and policy. The project endeavors to advance the scaled adoption of energy efficient technologies (IE3 motors) in India through the demand aggregation-based model as well as affordable financing mechanisms and ensure the dissemination of its learnings and experiences from India to address the barriers as well as replicate successful financial mechanisms and business models in other South Asian and Southeast Asian countries. The E2 Alliance is one of P4G's scale-up funding partnerships for the year 2019 aligning with SDG 7: Affordable and Clean Energy for All. Learn more at p4gpartnerships.org/global-ecosystems/ investment-and-knowledge-partners/energy-efficiency-alliance-industry-e2-alliance.

About Institute for Sustainable Communities

The Institute for Sustainable Communities (ISC) is on a mission to empower communities worldwide to address environmental, economic, and social challenges to build a better future shaped and shared equitably by all. Since its founding in 1991 by former Vermont Governor Madeleine M. Kunin and the former ISC President George Hamilton, the US-based non-profit organization has led transformative community-driven projects. It is funded by private foundations, corporations, individuals, and government agencies. ISC has led more than 130 transformative community-driven sustainability projects in 31 countries, including the United States, China, India, and Bangladesh, and continues to help unleash the existing power of local people and institutions to address immediate social, economic, and environmental challenges and opportunities. ISC combines technical expertise and leadership training with strategic investments in local organizations to create lasting change and build on-the-ground solutions into national and international best practices and policy. Learn more at sustain.org.

About Energy Efficiency Services Limited

Established in 2009, EESL is a joint venture of PSUs under Ministry of Power (Govt. of India), like NTPC Limited, PFC, REC and PGCIL which was set up to create and sustain markets for energy efficiency in the country. EESL is leading the market related activities of the National Mission for Enhanced Energy Efficiency (NMEEE), one of the 8 national missions under Prime Minister's National Action Plan on Climate Change (NAPCC). Since its inception, EESL has been a pioneer in implementing large scale energy efficiency projects in India through innovative financing and service mechanisms. The Flagship LED programs like UJALA and Street Lights are testimony to EESL's success stories over last 3-4 years which has not only created market transformation in energy efficiency but also been able to result employment, CO2 emission reduction and improving lifestyle of fellow citizens. EESL is engaged with various stakeholders and entities like end users, electricity utilities, state governments, manufacturers, service providers, financial institutions and test laboratories to bring success to these programs. EESL looks forward to provide investment and transaction based services to industries in their effort to transition into an energy efficient and sustainable future. Learn more at eeslindia.org/en/home/

EXECUTIVE SUMMARY

Southeast and South Asia have some of the fastest growth in energy and electricity demand in the world.[1] Between 2000 and 2015 the region's overall energy demand has nearly doubled, with growth of 80% during the period. With the economies of South Asian and South-East Asian countries growing at an exponential rate, the total energy consumption is expected to grow by 1.6 times over the next two decades under the business-as-usual scenario, with sustained population and economic growth. There is a potential of 15-30 per cent reduction in the energy demand if such countries adopt and implement energy-efficient, clean energy, and alternative energy measures.[2] Accelerating the adoption of energy efficiency is an extremely cost-effective way to mitigate climate change, with the International Energy Agency estimating that energy efficiency (EE) improvements could contribute half of the GHG reductions required to limit global temperature rise to 2°C above pre-industrial levels. Being the largest consumer of electricity in the world, the industrial sector[3] holds a huge potential for energy saving and GHG emission reduction through the implementation of energy efficiency measures. However, despite the environmental, technical and financial benefits of energy efficiency for industry, the utilisation of this potential remains largely sub-par and ineffective. Improvements are not being implemented at scale owing to limited knowledge and awareness about suitable interventions, high up-front costs and barriers to accessing finance, inadequate policy incentives as well as lack of technical awareness, baseline data and the low credibility of Energy Service Companies (ESCOs). Although there exist policy-based interventions and initiatives to promote the adoption of energy efficiency measures – they are deficient in their ability to viably reduce the financial and technical challenges that the industry faces in the implementation of such steps. This implies a significant need for innovative business models – presently limited in number – that can effectively persuade and support the industries to undertake the replacement of energy efficiency technologies.

The industrial sector holds a huge potential for energy saving and GHG emission reduction through the implementation of energy efficiency measures.

One such innovative model is the demand aggregation based ESCO model for the implementation of energy-efficient technologies. Energy Efficiency Services Limited (EESL), has been successful in employing this model for different categories of products like domestic lighting, domestic ceiling fans, street lighting, agriculture pumps and electric vehicles for customer bases like residential, commercial, municipalities, agriculture and utilities. Relying on the same concept, EESL has launched the National Motor Replacement Program (NMRP), which aims at replacing conventional inefficient motors with energy-efficient IE3 motors, and has the overall goal of bringing down the cost of IE3 motors, in order to stimulate the voluntary adoption of IE3 for new installations. Institute for Sustainable Communities (ISC) has been an active partner to EESL right from the conceptualisation and in the implementation of the NMRP Program and is currently jointly executing a project called the Energy Efficiency Alliance for Industry (E^2 Alliance) Project, accelerated by P4G (Partnering for Green Growth and the Global Goals 2030) which proposes to demonstrate and scale a demand aggregation ESCO based business model to drive the adoption of energy efficiency interventions by industry in Asia. The E2 Alliance is tackling critical barriers to energy efficiency through manufacturer engagement, affordability and financing, and policy. The E2 Alliance endeavours to disseminate its learnings and experiences from India- one of the top largest economies and largest energy consumers in the World, to address the barriers as well as replicate successful financial mechanisms and business models in Bangladesh, Indonesia, and Vietnam- all three countries being on the front line of climate change and offering significant renewable energy potential.

Towards that end, through this country-specific study, ISC conducted a landscaping assessment to map out opportunities for industrial energy efficiency and assess potential for replication of the E2 Alliance model in Indonesia, Vietnam and Bangladesh while also deepening its understanding about the present scenario of industrial energy efficiency in the countries and the region in terms of - policy and regulation, the energy intensive industrial sectors, potential sectors and technologies for EE interventions, challenges to the scaled adoption of such interventions as well as possible windows of opportunities, potential solutions and the pathways moving forward.

Country Profile

While Indonesia, the Philippines and Vietnam are the largest population and energy consumption centres of Southeast Asia and the ASEAN grouping, Bangladesh shares much closer economic and cultural ties with the South Asia region (typically also incorporating India, Nepal, Pakistan, and Sri Lanka). However, each of the countries share some similarities in terms of size, industrial makeup and activity, and energy sector parameters. The report presents a comprehensive picture of the industrial energy efficiency environment for each country having very different economic and energy sector circumstances, including a compilation of national and international commitments, policy and regulatory landscape, and existing initiatives to increase adoption of energy efficient technologies by industry. The study also identifies key stakeholders, including Energy Service Companies (ESCOs), technical institutions, energy efficient technology manufacturers, financial institutions, non-profit organizations and government institutions, to be engaged for effective further action.

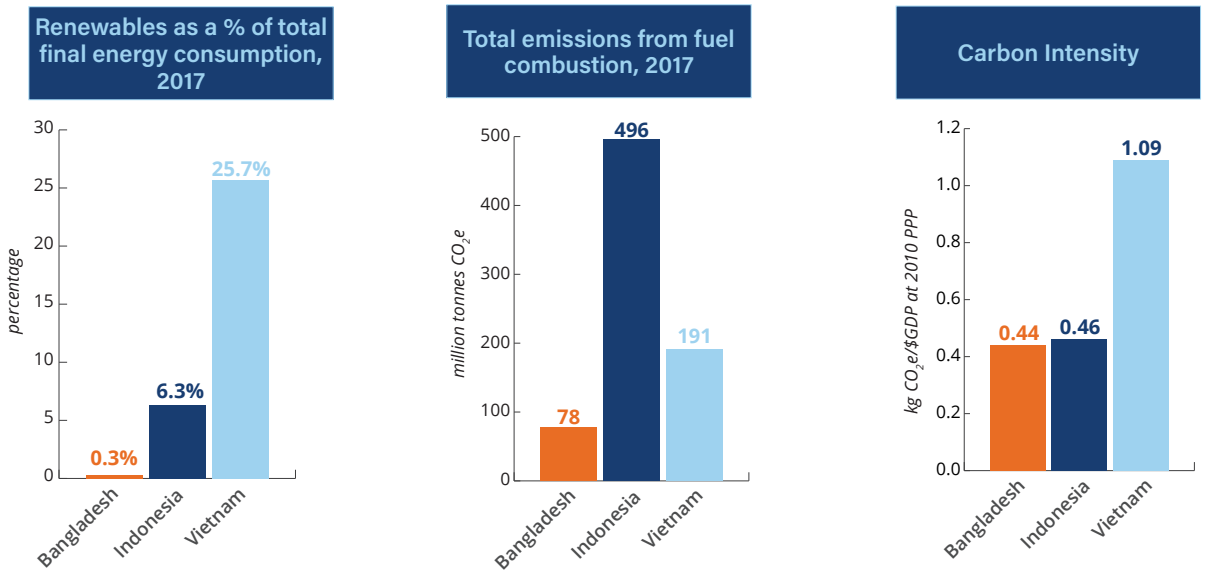
Table 1: Country-specific Data

INDICATORS	BANGLADESH	INDONESIA	VIETNAM
POPULATION	163,046,000	270,626,000	96,462,000
GDP	$245,633m	$1,015,539m	$223,780m
GDP AVERAGE GROWTH, 2018	7.9%	5.2%	7.1%
TOTAL FINAL ENERGY CONSUMPTION(MTOE), 2017	30.8	174.0	64.0
INDUSTRY AS A % OF GDP	29.7%	41.0%	34.5%
ENERGY DEMAND GROWTH, 2007-17	4.5%	2.3%	5.4%
ENERGY SUPPLY (TOE) PER CAPITA	0.25	0.92	0.55
ENERGY USED IN INDUSTRY	28.9%	25.9 %	54%

Source: Statista 2020, UNESCAP 2020

In terms of overall access to electricity, Bangladesh remains challenged in meeting the energy needs of its people. In 2018, an estimated 15% of its population did not have access to electricity, while Indonesia and Vietnam are approaching full electrification (World Bank, 2018). Indonesia is by far the largest producer and consumer of energy in the Southeast Asian region. Using 26% of the total primary energy in the region, Indonesia's energy consumption is equivalent to the combined use of primary energy from Thailand, Myanmar and Singapore. In 2016, Indonesia was also the second-largest coal exporter, the third largest oil importer and user of oil, and the tenth largest electricity generator in the world (IEA, 2016). Indonesia's energy needs are expected to continue to increase in the future along with increased economic activity and the level of prosperity of its citizens. At present all of the countries' average per capita primary energy is still quite low, compared to neighbours such as Thailand which has reached 2 toe/capita. Of particular note, is the high proportion of Vietnam's energy consumption directed to industry, at more than half of national consumption. This reflects the energy intensive nature of Vietnam's industry, with large production in cement, steel, metals processing and chemicals industries. Further, with the lowest progress towards clean energy generation (Table 2), Bangladesh is significantly dependent on indigenous natural gas production for its national energy supply.

Table 2: Renewable Energy and Greenhouse Gas Emissions



Source: UNESCAP, 2020

Policy and Regulatory Landscape for Industrial Energy Efficiency

	NATIONAL COMMITMENTS	OFFICIAL ENERGY EFFICIENCY TARGETS	POLICIES
BANGLADESH	• NDC commitment to unconditionally reduce 5% of GHG emissions from BAU levels from power, transport and industry	• EECMP targets to improve primary energy consumption per unit of GDP (=energy intensity) by 20% in FY 2029/30 (long-term) and by 15% for FY 2020/21 (mid-term)	• Energy Efficiency and Conservation Master Plan (EECMP) up to 2030 • Bangladesh Climate Strategy and Action Plan (BCCSAP) • Action Plan for Energy Conservation 2013 • Renewable Energy Policy 2008
INDONESIA	• NDC commitment to unconditionally reduce 29% of GHG emissions by 2030	• RUEN targets a reduction in energy intensity by 1% annually during the period of 2015-2025, and reductions in the final energy consumption by 17% and 39% by 2025 and 2050 respectively	• National Energy Policy, 2014 • National Action Plan on GHG Emissions Reduction, 2011 • National EE Standard for Buildings • Indonesia ESCO Regulation • National Energy Conservation Master Plan (RIKEN), 2017 • National Energy General Plan (RUEN), 2017
VIETNAM	• NDC commitment to unconditionally reduce 8% of GHG emissions by 2030	• VNEEP 3 has set a target to save 5% to 7% of total energy consumption in the period 2019 – 2025 and in the period 2026 – 2030, the program is expected to save 8% - 10% of total energy consumption	• Vietnam National Energy Efficiency Program (VNEEP 3) • Green Growth Strategy • Vietnam Energy Efficiency Financing for Industrial Enterprises Project • Energy Efficiency and Conservation Law • Administrative fines in electricity, hydroelectric dam safety, and efficiency and conservation

Potential Sectors and Technologies for Energy Efficiency Investment Opportunities

BANGLADESH

POTENTIAL SECTORS

- Textile
- Garment and Leather
- Steel and Iron
- Ceramics and Glass
- Cement and Clinker
- Chemicals
- Fertilizers
- Paper and Plastic

POTENTIAL TECHNOLOGIES

- **Electrical:** High Efficiency Motors, Use of Pre-Grinder Roller Press and VRM, Automatic Air Flow Control
- **Thermal:** Boilers, WHR, Drives, Furnace Insulation, Cogeneration, Efficient Machines and Combustion Efficiency

ENERGY SAVINGS POTENTIAL

- Textile, Garment and Leather - **32%**
- Steel and Iron - **41%**
- Cement and Clinker - **23%**
- Ceramics and Glass - **25%**
- Chemicals, Fertilizer, Paper and Plastic - **24%**
- Agroindustries, Food Processing, Sugar and Jute - **18%**

VIETNAM

POTENTIAL SECTORS

- Textile
- Chemical
- Food processing sectors

POTENTIAL TECHNOLOGIES

- **Industrial:** Motors, Efficient Boilers, Waste heat recovery, Cooling technologies, Trigeneration
- **Residential:** Lighting, Air Conditioning

ENERGY SAVINGS POTENTIAL

- Iron and Steel - **45%**
- Cement - **36%**
- Pulp and Paper - **6%**
- Food Processing - **2%**
- Chemicals - **12%**

INDONESIA

POTENTIAL SECTORS

- Cement
- Steel
- Textile and Chemical
- Food Processing
- Pulp and Paper

POTENTIAL TECHNOLOGIES

- **Electrical:** EE Motors, Industrial Process Control
- **Thermal:** Boiler Retrofits, Waste Heat Recovery, Cooling Technologies [cogeneration and trigeneration, combined heat and power]

ENERGY SAVINGS POTENTIAL

- Transportation - **15-35%**
- Industry - **10-30%**
- Household - **15-30%**
- Commercial - **10-30%**

Sources: ADB (Tetratech), 2014; 2018 Handbook of Energy and Economic Statistics of Indonesia, KESDM; MEMR Multiple Presentations; RIKEN 2011; Includes Agriculture, Construction and Mining sectors; Excludes Biomass and Non-Energy Use; Nguyen 2020

Challenges and Barriers to Accelerated Adoption of Industrial Energy Efficiency

The analysis was supplemented with a range of key informant interviews and stakeholder consultations, to ensure that findings reflected the current challenges and barriers on-ground based on the experience and expertise of the practitioners. Based on the assessment and interaction with relevant stakeholders, the broad challenges and barriers identified in the study are summarized in the table below:

Limited awareness about energy efficient technologies, M&V protocols

Limited capacity of the technical experts and ESCOs in creating investment grade audits reports

Lack of trainings and capacity building for auditors, system optimisation experts and ESCOs

Limited capacities of financial institutions in appraisal of EE projects and limited technical knowledge about EE&C initiatives among financial institutions

Lack of access to affordable and easy finance for EE implementation and lack of commercially attractive local financing for EE funding

ESCO market either non-existent or not very active if exist; market is not fully developed and has high transaction costs for relatively smaller projects

Perception of financial institutions that the potential energy efficiency lending market is small, high-risk, time consuming and will require high transaction costs

Weak enforcement of regulations and policies

Limited incentives (especially financial) for the industries for EE implementation

Limited technical capabilities to establish savings

Lack of technical support resulting in low implementation of EE measures

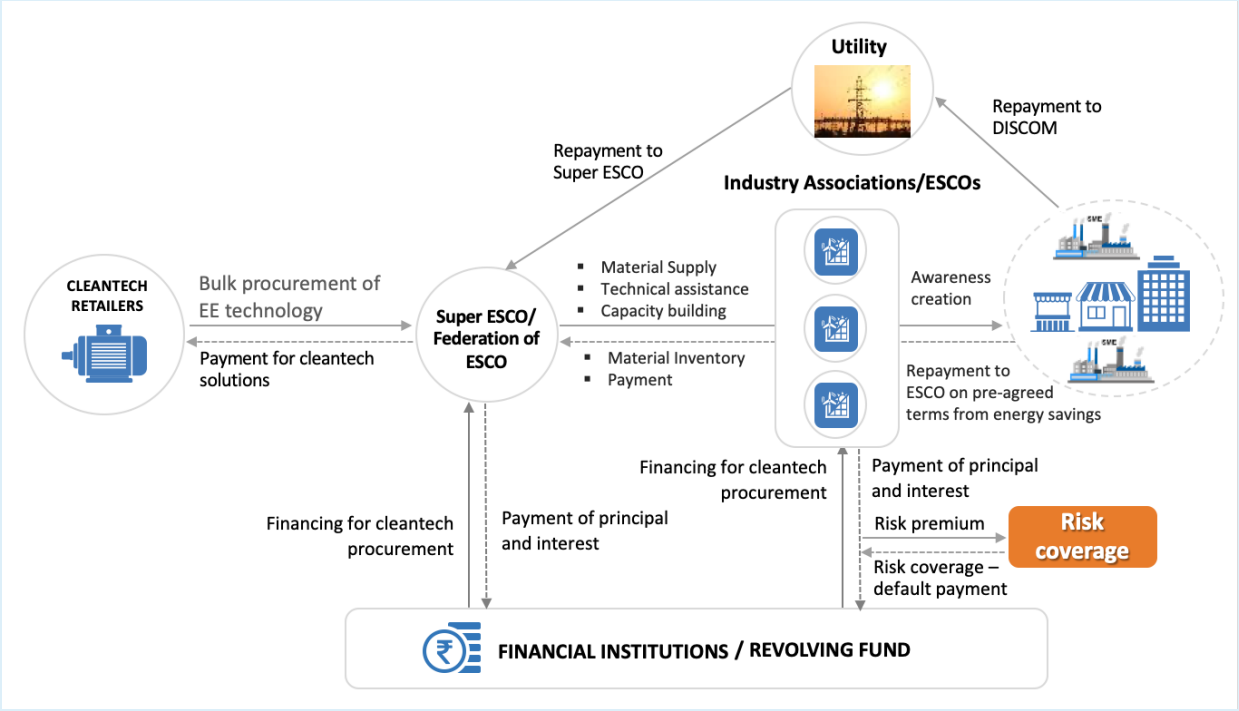
Perception of high risk about the technology performance

Identifying Opportunities and Potential Measures for Energy Efficiency Investment Opportunities

	POTENTIAL MEASURES AND OPPORTUNITIES	KEY STAKEHOLDERS
BANGLADESH	**Opportunities:** • Expected future growth of manufacturing sectors particularly textile and garment sector vis-à-vis the increasing natural gas supply and demand gap necessitates EE intervention • Country is committed to achieving energy savings and GHG reductions with its considerable international commitment and implementation of the Energy Efficiency and Conservation Master Plan • Demand for industrial energy efficiency to improve profitability • Scope for catalyzing the ESCO market • Need for innovative business models to accelerate adoption of EE technologies at scale **Potential Measures:** • Development Finance Program • National ESCO-based model	• **Govt. Agency** – SREDA • **State** – IDCOL, BIFFL, BB • **Industry** – BGMEA, BKMEA
INDONESIA	**Opportunities:** • Identified Potential for energy saving and increasing electricity tariffs in Industrial sector • Scope for catalyzing the ESCO market • Need for innovative business models to accelerate large scale EE adoption by address financing related challenges • Need for technical support i.e., capacity building and training • Updation in the PP70 policy i.e., coverage of more number of industries **Potential Measures:** • De-Risking' of energy efficiency project-based lending • Capacity building and awareness creation • Dedicated line of credit/revolving fund • Demonstration of Demand Aggregation and ESCO financing-based models	• **Govt Agency-** Ministry of Energy and Mineral Resources, Ministry of Industry (MoI),PLN (state electricity company), Government Investment • **ESCO-** Indonesia Energy Service Company Association (APKENINDO) • **Local organizations**- MASKEEI
VIETNAM	**Opportunities:** • Country level initiatives and EE system in place but existing need for financing related intervention for large scale deployment • Need for EE with increasing competition in the market (particularly for export-oriented units) • Need for training and capacity building for auditors, systems optimization experts, SMEs, industry owners, ESCOs and other stakeholders in the eco-system • ESCO market is not developed so far and there is need for technology standardization as well as local technology suppliers **Potential Measures:** • De-Risking' of energy efficiency project-based lending • Capacity building and awareness creation • Ways to better involve the private sector and unlock private investments in industrial efficiency • EE standards and technical guidelines for appliances and equipment for energy consumption reductions and GHG emission reductions in selected sectors • Demonstration of demand aggregation and ESCO financing-based models in selected sectors	• **Govt Agency-** Ministry of Industry and Trade (MOIT) - The Department of Energy Efficiency and Sustainable Development (EESD), MoC and MPI, People's provincial committees (Department of Industry and Trade – DoIT) • **Industry-** Vietnam Steel Association (VSA), Vietnam Cement Association, (VNCA), Vietnam Fertilizer Association (VNFAV), Vietnam Pulp and Paper Association, Vietnam Association of seafood exporters and producers (VASEP)

The Demand Aggregation Model for Energy Efficient Industry

An innovative way to overcome the key challenges identified as a stumbling block for large scale EE adoption in industrial sectors is through a Super ESCO model approach, the concept of which is defined through a demand-aggregation based system and offerings of innovative financing mechanisms. A prime example of sucessful implementation of this approach is India's Energy Efficiency Services Limited (EESL), which has deployed this model with widespread impact in India. EESL has been successful in employing this demand aggregation based model for different categories of products like domestic lighting, domestic ceiling fans, street lighting, agriculture pumps and electric vehicles for customers bases like residential, commercial, municipalities, agriculture and utilities. Relying on the same concept, EESL has launched the National Motor Replacement Program (NMRP), which aims at replacing conventional inefficient motors with energy-efficient IE3 motors, and has the overall goal of bringing down the cost of IE3 motors, in order to stimulate the voluntary adoption of IE3 for new installations. The Institute for Sustainable Communities (ISC) has been an active partner to EESL right from the conceptualization and in the implementation of the National Motor Replacement Program (NMRP), and is currently jointly the Energy Efficiency Alliance for Industry (E2 Alliance) Project in Asia.



To achieve the large-scale adoption of the industrial energy efficiency, this model leverages the competencies and experience of local ESCOs and financing institutions. Within this approach of the E2 Alliance model, EESL holds the position as a Super ESCO that conceptualizes specific programs and aggregates demand on the behalf of the industries nation-wide and performs efficient bulk procurement selection thereby leading to reduction in high capex of EE technologies. Further, in order to extend outreach and enable a conducive as well as sustainable ecosystem, the model leverages the network of mini-ESCOs within the country wherein such private players play the role of an extended arm of the Super ESCO (EESL) and given the advantage of their local presence, knowledge and outreach - the mini-ESCOs interact with industries, provide them with the required technical assistance and aggregate demand on behalf of the Super ESCO. In turn, EESL performs the bulk procurement process and technology standardization while also building the capacity and knowledge through training and mentoring of the mini-ESCOs. Depending upon the specific modalities, the upfront investment required for the technology installation can be made either by EESL or mini- ESCO or even the unit. The investment made by ESCO companies can be repaid from the monetized energy savings realized through replacement of old technology with energy efficient technology. Further, in order to enhance payment security mechanisms, the financing can be linked with de-risking strategies. In addition, demand side management (DSM) approaches involving support from utility-based companies can also be explored to ensure payment security. In India, E2 Alliance model is working with selected DISCOMs to demonstrate this concept.

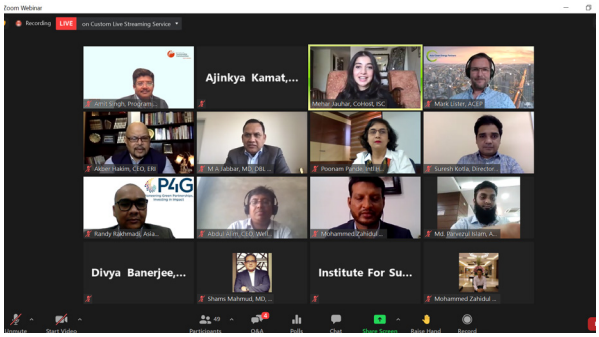
What Experts Have to Say – Insights from Stakeholder Consultations

To further delve deep into the findings of this study, ISC convened stakeholder conferences in Bangladesh and Indonesia (with the one in Vietnam upcoming) bringing together key players in industrial energy efficiency ecosystem, to examine the challenges, potential solutions and partnerships required to accelerate take-up of industrial energy efficiency in the respective countries as well as the region. The events helped bring forward the perspectives of key stakeholders in the energy ecosystem, and look for solutions and innovative, deployable business models to accelerate the adoption of EE and clean energy measures in the countries. The conferences witnessed participation from a veritable set of highly experienced and leading speakers and audience representing the various domains of industry, government, finance, the energy sector, technology vendors, international organisations and key institutions implementing energy efficiency within Bangladesh, Indonesia and the region.

BANGLADESH

About the Conference

"Energy efficiency is the counterpoint that presents the opportunity to reduce energy demand by 15-30% thereby unlocking cost effective energy access opportunities for all.....of all possible approaches to climate action, energy efficiency offers the greatest promise, since it significantly reduces energy consumption while reducing energy costs and providing an attractive financial return", said Deeohn Ferris, President, Institute for Sustainable Communities (ISC), at the virtual stakeholder conference convened by ISC in Bangladesh on March 25th, 2021. The event was co-convened with Bangladesh's Engineering Resources International (ERI) as well as Asia Clean Energy Partners (ACEP). The following stakeholders attended the meeting as speakers - Sustainable and Renewable Energy Development Authority (SREDA), Infrastructure Development Finance Company Limited (IDCOL), DBL Group, Shasha Denim Ltd, Wellmake Engineering and Technology, Partnering for Green Growth and the Global Goals 2030 (P4G) and Energy Efficiency Services Limited (EESL). Over 60 industry participants also joined as an interactive audience for the event.



"Industrial and Residential sectors are the current energy intensive sectors in Bangladesh which provides a very good opportunity for adopting energy efficient equipment though the funding sources are not abundant. There are very few organisations in Bangladesh that provide capacity building and awareness creation with respect to EE, and it should be a major goal in the upcoming years while focusing on renewables, and increased energy efficiency."

MOHAMMED ZAHIDUL HAQUE
Senior VP and Unit Head, Industrial and Energy Efficiency Finance, IDCOL

Participants

AKBER (AL) HAKIM
CEO, Engineering Resources International (ERI)

DEEOHN FERRIS
President and CEO, Institute for Sustainable Communities

VIVEK ADHIA
Country Director India, Institute for Sustainable Communities

RANDY RAKHMADI
Director Asia, Partnering for Green Growth and the Global Goals 2030 (P4G)

MD. PARVEZUL ISLAM
Assistant Director, Sustainable and Renewable Energy Development Authority (SREDA)

MD. ZAHIDUL HAQUE
Senior VP and Unit Head, Industrial and Energy Efficiency Finance, IDCOL

ABDUL ALIM
CEO, Wellmake Engineering and Technology

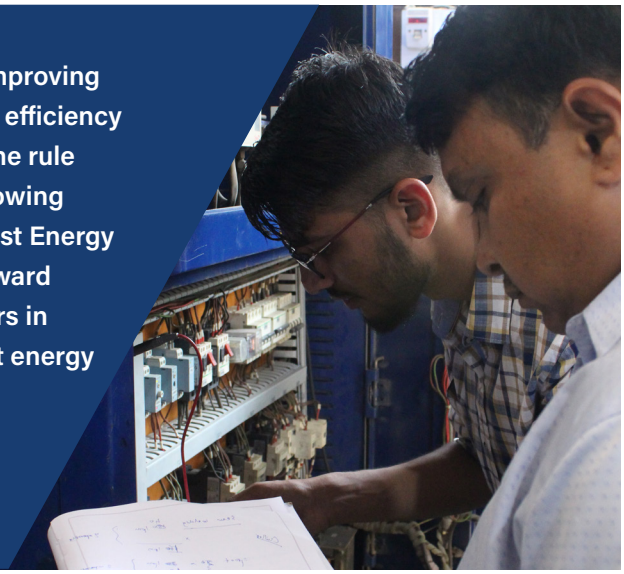
M.A. JABBAR
Managing Director, DBL Group

SHAMS MAHMUD
Managing Director, Shasha Denim Ltd.

POONAM PANDEY
Energy Efficiency Services Limited (EESL)

"As per the SREDA energy masterplan for improving energy efficiency we have prepared 'Energy efficiency and conservation rules' in 2016 and under the rule we have Energy Audit Regulation 2018. Following these regulations we have conducted the first Energy Auditor Certificate Exam in 2020. Going forward we will identify the largest energy consumers in Bangladesh who will be required to conduct energy audits regularly."

MD. PARVEJUL ISLAM
Assistant Director, Sustainable and Renewable Energy Development Authority (SREDA)



Insights

The conference was well-poised to capture and learn from the different perspectives, insights and respectable experiences of a wide range of stakeholders and key players from the energy ecosystem in Bangladesh - the key highlights and takeaways from the consultation include:

ENERGY EFFICIENCY INITIATIVES FOR THE INDUSTRY IN BANGLADESH

- Bangladesh's national primary energy consumption is increasing rapidly and placing significant strain on available energy capacity. Historically the industrial sector has consumed 40% to 50% of total (non-biomass) energy consumption and is the top sector in terms of energy usage. Energy efficiency is therefore a priority for the Government through SREDA.
- The textile industry has been assessed as having the biggest potential for industrial energy efficiency in Bangladesh; behind China the country is the second largest exporter of textiles, clothing and footwear in the world.
- Thermal energy efficiency has a huge potential compared to electrical energy efficiency, due to existing demands and its continuous operation (24/7). Efficient boilers and waste heat recovery and therefore important technologies, while motors, pumps and drives are also relevant.
- SREDA's financing facility targeting EE mostly in the textile industry has seen very good take-up with expansions of this facility now planned to other technologies and industries.

CHALLENGES TO ADOPTION OF INDUSTRIAL ENERGY EFFICIENCY

- High initial investment costs for financing due to non competitive interest rates, and complex application procedures thereby locking out a number of smaller companies.
- Capacity gaps in the ability of companies to source qualified energy savings professionals and engineers that can adequately assess energy efficiency opportunities and recommend solutions leading to improper assessment and selection of technologies, incorrect or inefficient installation operation, and issues with maintenance.
- Absence of consideration for energy efficiency during project planning, designing, erection, machinery and equipment selection, installation, operation and maintenance.
- Need for better coordination between actors and proponents of energy efficiency, to build networks and improve communications to ensure that opportunities can be realized.

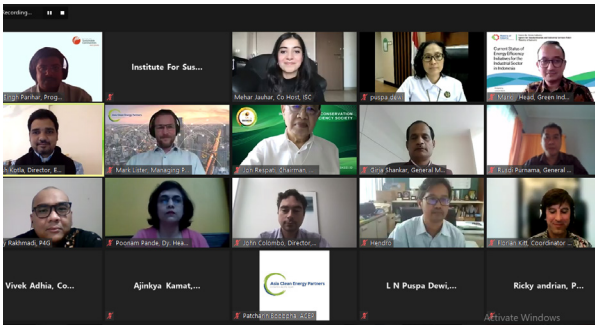
POTENTIAL SOLUTIONS/OPPORTUNITIES TO ACCELERATE ADOPTION OF ENERGY EFFICIENCY

- While much has been made of the opportunities in the textile industry in Bangladesh, and financing for implementation has seen a good level of take-up, there are a number of other sectors in which could be targeted in the chemical, glass, pulp and paper, food and beverage/cold storage, ceramics, pharmaceutical and metals industries.
- Target smaller organizations/SMEs that are currently unable to find easy access to available finance facilities provided through SREDA (via IDCOL/BIFFL).
- Stronger informational and coordinating role by SREDA to make sure awareness is raised between and among industries.
- Opportunities for greater aggregation of demand to achieve accelerated financing (already being worked on by ERI and EESL- taking this forward will require a greater engagement and organization of local industry players, as alluded to above
- In terms of the feasibility of implementing innovative business models such as the Super-ESCO model jointly being implemented by EESL and ISC in India, there is some prospect for the applicability of this model, which could play a role as an aggregating entity providing affordable finance as well as imparting technical capacities while ensuring ownership and implementation by the local private sector ESCO market.

INDONESIA

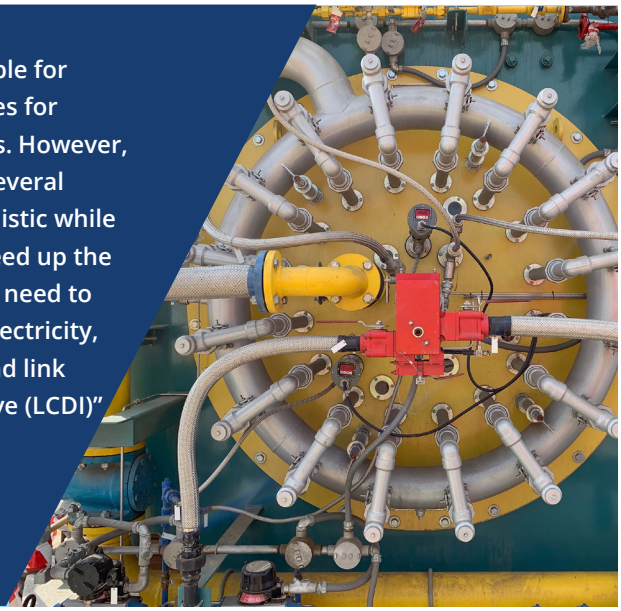
About the conference

"Perhaps energy efficiency can prove to be the vaccine that spurs the industrial recovery and manufacturing growth", said Vivek Adhia, Country Director India, Institute for Sustainable Communities (ISC), at the virtual stakeholder conference convened by ISC in Indonesia on March 03rd, 2021. The event was co-convened with Indonesia's Energy Conservation and Efficiency Society (MASKEEI) as well as Asia Clean Energy Partners (ACEP). The following stakeholders attended the meeting as speakers - Ministry of Energy and Mineral Resources (MEMR), Ministry of Industry (MoI), Indonesia Energy Conservation and Efficiency Society (MASKEEI), Asian Development Bank (ADB), Clime Capital, Danfoss Indonesia, PT INDESCO, Partnering for Green Growth and the Global Goals 2030 (P4G) and Energy Efficiency Services Limited (EESL). Over 70 industry participants also joined as an interactive audience for the event.

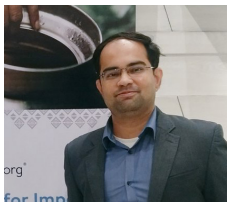


"There are abundant natural resources available for renewable energy, and so are the opportunities for investors to develop efficient energy pathways. However, we are still facing a balance of payment and several other challenges. But we should remain optimistic while moving forward towards sustainability. To speed up the development of clean energy in Indonesia, we need to gradually eliminate subsidies for fuel-based electricity, set specific targets for energy in all sectors, and link them to the Low Carbon Development Initiative (LCDI)"

R.M. SOEDJONO (JON) RESPATI
Chairman of the Indonesian Energy Efficiency and Conservation (MASKEEI)



Participants



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Director, PT INDESCO

"Energy Conservation is one of the key priority areas for many businesses in Indonesia, as we encourage them to adopt improved productivity with fewer emissions and waste. By 2020, 113 companies were certified with ISO 50001 in the energy management system. The certification promotes international standards for Energy Management, providing a robust framework for optimizing energy efficiency in public and private sector organizations."

L.N. PUSPA DEWI
Director of Energy Conservation, Ministry of Energy and Mineral Resources

Insights

The conference was well-poised to capture and learn from the different perspectives, insights and respectable experiences of a wide range of stakeholders and key players from the energy ecosystem in Indonesia - the key highlights and takeaways from the consultation include:

ENERGY EFFICIENCY INITIATIVES FOR THE INDUSTRY IN INDONESIA

- Indonesia is committed to reduce GHG emissions by 29% from BAU by 2030 for which MEMR has insured a multi-pronged approach to achieve energy targets inclusive of energy management implementation, dissemination and collaboration, innovation as well as achieving milestones in energy efficiency and clean energy through international awards and competitions.
- Energy conservation programs for the industrial sector to help companies reduce the operational cost of energy usage. The programs have demonstrated a clear business value of implementing energy management systems with energy performance improvement by 10% and more.
- MOI has established eight sub-sectors to promote energy efficiency and CO2 reduction - the key areas of which include online reporting system integrated to the National Industrial Information System, technical guidance on energy efficiency and carbon reduction, green industry standards, capacity building and knowledge sharing.
- Adopted low carbon development (LDC) models to achieve the SDG goals.

CHALLENGES TO ADOPTION OF INDUSTRIAL ENERGY EFFICIENCY

- Limited common understanding and political consensus about adoption of sustainability processes, inefficiency in coordination between government implementing bodies as well as a lack of standards for achievement for the industry.
- High transaction costs and limited availability of easy, affordable and accessible finance for ESCO providers coupled with lack of projects with value.
- Project financing is next to absent especially due to lack of experience and knowledge on part of the banking institutions when it comes to projects pertaining to energy efficiency and renewable energy. Hence, reliance of banking institutions remains on corporate credit ratings that are only applicable to large-scale economically viable corporate-level projects - which makes it difficult for industries or municipalities or other project holders to find financing purely on a project payment and economic beneficial basis. Further, there is a huge energy efficiency knowledge void in the market – low awareness of energy efficiency technologies and extremely low confidence/trust in energy savings.
- Low priority of energy efficiency for industry facility owners including a lack of confidence and knowledge.

POTENTIAL SOLUTIONS/OPPORTUNITIES TO ACCELERATE ADOPTION OF ENERGY EFFICIENCY

Regulatory:

- Simplification of the process for obtaining permits for the use of hazardous and non-hazardous waste as alternative feedstock and alternative fuel for industry.
- Integrating energy efficiency outcomes with a carbon reduction framework. Ensuring the growth of energy efficiency in tandem with green job opportunities.
- Reduce and gradually eliminate energy subsidies for fuel and electricity.
- Create a government sector based ESCO market through PPP thereby encourage private players to participate in the market.
- A priority program with a committed policy inclusive of strategy and a clear roadmap towards achieving the objectives of energy efficiency. This should also include regulatory mandates such as 17 per cent energy savings in government facilities. Set specific targets for energy efficiency across all sectors and link them with LDC as well as NDC – also encourage industries through incentives and disincentives to set own targets and pledge commitments to the government.

Financial:

- Treat energy efficiency savings value fairly and compensate it in the same way as reducing carbon emissions from renewable energy application.
- Create effective, accessible and affordable financial models for the ESCO market as well as an appealing incentives and disincentives systems for clean energy players. Aggregation of projects to make them economically viable.

Information and Capacity Enhancement:

- Capacity building and skill enhancement of all relevant stakeholders (Industry managers, technical experts/energy auditors/project developers/financing institutions/ESCOs) about EE technologies, project development, appraisal and financing.
- Provide industry with required technical assistance to help assess risk as well as develop and disseminate case studies of more upcoming successful projects and models.
- ESCO providers to engage industry associations, commercial building associations and other potential aggregators to build awareness around energy saving opportunities.

Innovative Solutions:

- Bolstering the growth of energy efficiency as well as new and renewable energy using innovative financing/business models to ensure a comprehensive and synergetic approach. Immense opportunity for commercial and industrial solar providers to engage and work with energy efficiency providers.
- Exploring LED distribution innovative business models as described by EESL.
- In terms of the feasibility of implementing innovative business models such as the Super-ESCO model jointly being implemented by EESL and ISC in India, though the prospect of it being implemented as a solely government owned model remained dim – the stakeholders stated the applicability of the model through highlighting the pertinent need for an aggregating entity providing affordable finance as well as imparting technical capacities while ensuring ownership and implementation by the local private sector ESCO market.

Conclusion and Way Forward

Overall, while the environment and ecosystem is conducive to industrial energy efficiency given the range of government as well as private initiatives and policy interventions in Bangladesh and Indonesia - there exists a huge potential for the accelerated and scaled adoption of industrial energy efficiency through the implementation of innovative business models. Towards that end, the E2 Alliance Project aims to work in collaboration with key stakeholders in the respective countries in order to implement and replicate such unique financing and business models for the scaled take-up of energy efficiency measures. As next steps, ISC plans to take forward the learnings from the findings of the study and the stakeholder conferences to engage with each stakeholder in the form of focus group discussions – to gain further insight and take a deep-dive into potential concrete steps which would promote the accelerated adoption of energy efficiency in the country as well as create prospects for a B2B approach.

Endnotes

1 Southeast Asia Energy Outlook : Comprehensive review of a region on the rise, 2019 (https://www.iea.org/reports/electricity-market-report-december-2020/2020-regional-focus-southeast-asia)

2 Energy Outlook and Energy Saving Potential in East Asia 2019, ERIA for ASEAN and East Asia

3 Energy Outlook and Energy Saving Potential in East Asia 2019, ERIA for ASEAN and East Asia